

Patent Abstracts of Japan

PUBLICATION NUMBER : 06300739  
PUBLICATION DATE : 28-10-94

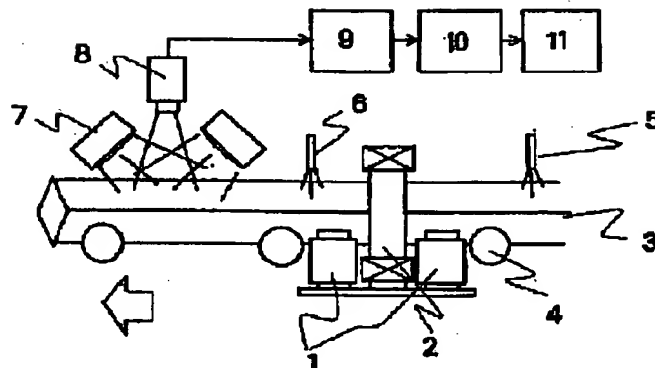
APPLICATION DATE : 19-04-93  
APPLICATION NUMBER : 05091602

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INT.CL. : G01N 27/84 G01N 21/91

TITLE : FLUORESCENT MAGNETIC-PARTICLE  
FLAW DETECTION METHOD



**ABSTRACT :** **PURPOSE:** To detect a microscopic flaw and to quantify the depth of a flaw by a method wherein fluorescent magnetic particles whose luminescent colors are different according to particle sizes are made to adhere to a flaw part in a magnetized material to be inspected, they are made luminescent, they are imaged and the depth of the flaw is estimated on the basis of the lightness component and the hue component of an electric signal.

**CONSTITUTION:** A fluorescent magnetic-particle liquid is sprayed 5 uniformly on a material 3, to be inspected, which has been magnetized respectively in the circumferential direction and the axial direction by an interpole-type magnetizer and a through-type magnetizer 1, 2, and an excess magnetic-particle liquid is purged 6. Then, a fluorescent magnetic particle which has adhered to a flaw part is made luminescent by an ultraviolet lamp 7, its light is imaged by a color ITV camera 8, its image is converted into an electric signal, and the electric signal is transmitted to a color image processing device 9. The device 9 extracts the flaw part on the basis of a lightness signal, it finds the morphological characteristic parameter such as the width, the length and the like of a flaw, and it finds the spectral component at the flaw part which is changed by the amount for every kind of the particle size of the magnetic particle. On the basis of a measured value, a signal processing part 10 finds the final harmfulness degree of the flaw, and it displays 11 the position, the shape and the depth of the flaw as a graphic form. Thereby, the depth of the flaw can be estimated in a wide range, and a microscopic flaw can be detected.

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